

TWO NEW SPECIES OF THE GENUS *MIMESA* FROM XINJIANG, CHINA (HYMENOPTERA, APOIDEA, CRABRONIDAE)

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Abstract Two new species of *Mimesa* Shuckard (Crabronidae, Pcmphredoninae, Psenini) are described from Xinjiang, China, *M. quadridentata* Ma, Li et Chen, sp. nov. and *M. sparsipunctulata* Ma, Li et Chen, sp. nov. A key to the Chinese species of the genus *Mimesa* is updated to include the two new species.

Key words Hymenoptera, Crabronidae, *Mimesa*, new species, China.

1 Introduction

To date, the genus *Mimesa* Shuckard (Hymenoptera, Crabronidae) is represented by 73 species of small to medium size predatory solitary wasps worldwide, of which 29 species occur in Palearctic, 4 in Oriental, 35 in Nearctic, 1 in Ethiopian, 2 in both Palearctic and Nearctic Regions, and 2 in both Palearctic and Ethiopian Regions (de Beaumont, 1937; Gussakovskij, 1937; Fahlander, 1957; Bohart and Menke, 1976; Fennimore, 1980; Gittins, 1966; van Lith, 1965, 1974; Lomholdt, 1975; Malloch, 1933; Oehlke, 1965, 1970; Rohwer, 1910a, 1910b, 1916; Tsuneki, 1959, 1972; Wu and Zhou, 1996). In China, 16 species of the genus have been recorded (Ma *et al.*, 2008). During our study on *Mimesa* from Xinjiang, two new species are discovered, which are described and illustrated here.

2 Taxonomy

Key to species of *Mimesa*

The specimens examined in this study are deposited in the following institutions: Institute of Zoology, the Chinese Academy of Sciences, Beijing, China (IZB) and Zhejiang University, Hangzhou, China (ZJUH).

The specimens were observed and illustrated under the Olympus stereomicroscope (SZ Series, Japan) with an ocular micrometer. For the terminology we mainly follow Bohart and Menke (1976). The abbreviations in the text are as follows: HLD, head length from dorsal view (the distance from frons to occipital margin in the middle); HLF, head length from frontal view (the distance from vertex to clypeal margin in the middle); HW, head width (dorsal view, maximum); POD, postocellar

distance (distance between inner margins of hind ocelli); OOD, ocellocular distance (distance between out margin of hind ocellus and nearest inner orbit); OCD, ocello-occipital distance (distance between posterior margin of hind ocellus and occipital margin, dorsal view); PW, petiole width (dorsal view, in the middle); PL, petiole length (lateral view); WTI, maximum width of gastral tergum I (dorsal view); LTI, maximum length of gastral tergum I (dorsal view); HFL, maximum length of hind femur; HTL, maximum length of hind tibia.

3 Results and Discussion

The key to species of *Mimesa* from China presented by Ma, Li and Chen (2008) can be modified by replacing couplet 11 in female and couplet 2 in male as follows, including the two new species from China.

Females

(Diagnostic characters for females: 12 antennal segments, pygidial plate present)

11. Metapleuron with dense, slender, long ridges; gastral tergum I medially and posteriorly, and tergum II reddish brown *M. pekingensis* (Tsuneki)
Metapleuron without ridges, or with sparse, short ridges on upper portion; gastral segments different color 11'
- 11'. Upper frons, ocellar and vertex area with very sparse micro-punctures that are 3–5 × diameters apart; gastral segments I to III dark brown *M. sparsipunctulata* Ma, Li et Chen, sp. nov.
Upper frons, ocellar and vertex area with dense, fine to midsize punctures that are less than one diameter apart; gastral segments different color 11''
- 11''. Propodeal enclosure flat, not delimited by carina; mesopleuron impunctate or with sparse micro-punctures; gastral tergum I medially and posteriorly, terga II–III, and pygidial area apically reddish brown ... *M. quadridentata* Ma, Li et Chen, sp. nov.
Propodeal enclosure impressed, delimited by distinct carina; mesopleuron with sparse or dense, fine punctures; gastral segments I and II or I to III or I to IV partly or wholly reddish brown or fulvous 12

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Males

(Diagnostic characters for male: 13 antennal segments, pygidial plate absent. Male unknown for *M. quadridentata* sp. nov.)

2. Dorsal surface of petiole with longitudinal carina medially, moderately or strongly convex; basal width of petiole equal to apical width ... 3
Dorsal surface of petiole without carina medially, flat or impressed or weakly convex dorsally, petiole equal to apical width or distinctly widened toward apex 2'
- 2'. Upper frons, ocellar and vertex area with very sparse micro-punctures; petiole weakly convex dorsally, basal width of petiole equal to apical width (Fig. 5), lateral surface of petiole flat, without carina; antennal segments IV – VII beneath with linear tyloids (Fig. 8) *M. sparsipunctulata* Ma, Li et Chen, sp. nov.
Upper frons, ocellar and vertex area with dense, midsize punctures that are equal to or less than one diameter apart; dorsal surface of petiole flat or impressed medially and posteriorly, petiole distinctly widened toward apex, lateral surface of petiole with one sturdy, longitudinal carina on each side, two or three sturdy, longitudinal carinae on its apical half; antennal segments III – VIII beneath with linear tyloids *M. lutaria* (Fabricius)

1 *Mimesa quadridentata* Ma, Li et Chen, sp. nov.
(Figs 1 – 3)

Diagnosis. The female of this species can be distinguished from *M. kaszabi* Tsuneki (1972) and other species of the genus by the following characters: POD: OOD: OCD with different ratio; dorsal surface of petiole slightly convex, distinctly widened toward apex, and with shallow depression posteriorly; petiole with one slender, longitudinal carina on each side on its apical half laterally; propodeal enclosure flat, not delimited by carina; hind femur slightly exceeding end of petiole; mesopleuron with micro-punctures, upper mesopleuron with sparse, slender, longitudinal rugae; mesoscutum and scutellum with fine, sparse punctures; and different body coloration.

Description. Female. Body length 7.9 – 8.2 mm. Black; mandible apically bright ferruginous; antenna beneath, tibia basally, tibial spur, tarsus, tegula, wing vein, gastral tergum I medially and posteriorly, terga II – III, and pygidial area apically reddish brown. Setae on clypeus and lower frons silvery; pubescence on vertex, scutum, scutellum, metanotum and leg silvery, sparse, on propodeum silvery, dense, long.

Clypeus with dense, fine punctures; free margin with four denticular prominences medially; near apex with transverse tubercle, elliptic, shiny, impunctate (Fig. 1); base half of clypeal disk slightly elevated. Mandible bidentate apically. Interantennal tooth very low, inconspicuously (Fig. 1). Antenna claviform, segments III – XII gradually thicker and slightly shorter toward apex; segment III about 3 ×, segment IV about 2 ×, and segment XI more than 1 × as long as wide apically, respectively. Upper frons, ocellar area and vertex basally with dense, fine punctures that are less than one diameter apart; ocellar area moderately elevated. HW: HLD: HLF = 81:30:62; POD: OOD: OCD = 11:14:12.

Mesoscutum and scutellum with fine, sparse punctures that are 2 – 3 × diameters apart. Metanotum with fine and dense punctures. Mesopleuron with sparse micro-punctures, upper portion with sparse, slender and longitudinal rugae. Propodeal enclosure flat, not delimited by carina, with very slender, sparse, longitudinal rugae; posterior surface of propodeum with longitudinal rugae laterally, remainder with very slender, irregular, reticulate rugae; lateral surface of propodeum alutaceous, upper area with longitudinally oblique ridges, sparse and slender. First recurrent vein of forewing ending in second submarginal cell; second recurrent vein ending in second submarginal cell or interstitial. Legs normal, hind tibia with one or two rows of yellowish spines on outer surface, spines slender, slightly longer than adjacent pubescence.

Dorsal surface of petiole slightly convex, distinctly widened toward apex, with shallow depression posteriorly (Fig. 2); petiole with one longitudinal carina on each side, two slender, longitudinal carinae on its apical half laterally; ventral surface of petiole flat, without keel. PL: PW: LTI: WTI: HFL: HTL = 38:8:38:40:46:48. Hind trochanter not reaching end of petiole, hind femur slightly exceeding end of petiole. Gastral segments shiny, impunctate; pygidial area elongate triangle, with dense, fine punctures and setae, apex obtuse (Fig. 3).

Male. Unknown.

Holotype ♀, China, Xinjiang, Zepu (38°12'N, 72°16'E), 16 July 1991, coll. HE Jun-Hua. Paratype 1 ♀, China, Xinjiang, Pishan (37°4'N, 78°18'E), 17 July 1991, coll. HE Jun-Hua.

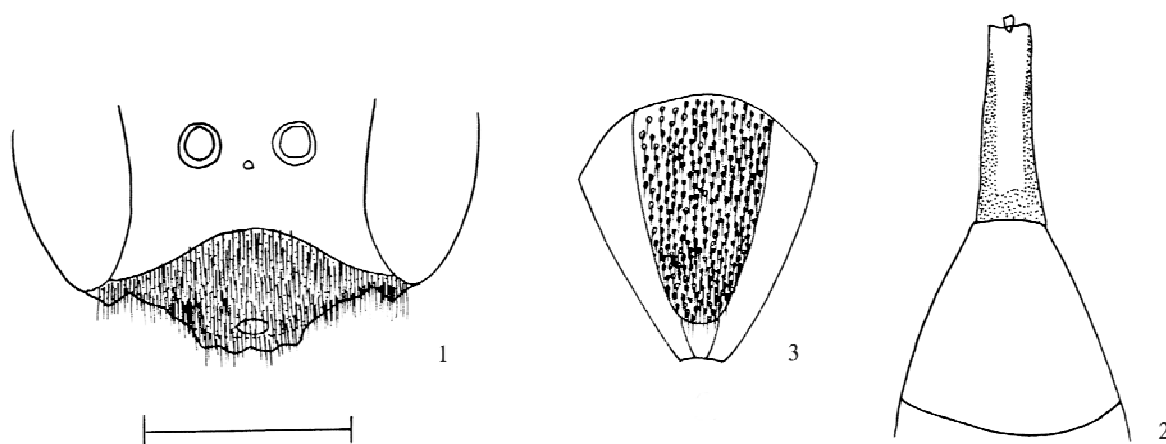
All type specimens are deposited in the Insect Collections of Zhejiang University, Hangzhou, Zhejiang Province, China.

Distribution. China, Xinjiang.

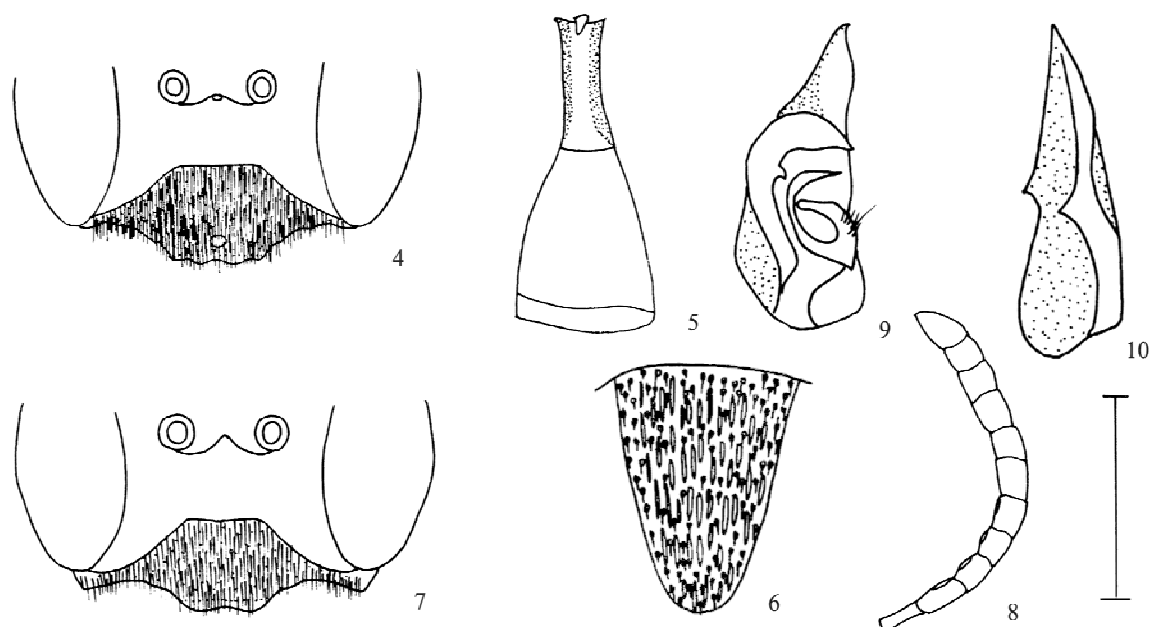
Etymology. The name *quadridentata* is derived from the Latin *quadri* (= fourfold) and Latin *dentata* (= dentate), referring to free margin of clypeus with four denticular prominences medially, one of the main recognition characters of this species.

2 *Mimesa sparsipunctulata* Ma, Li et Chen, sp. nov. (Figs 4 – 10)

Diagnosis. This species can be distinguished from *M. lutaria* (Fabricius, 1787) and the other species of the genus by the following characters: antennal segments IV – VII beneath with linear carinae in male; in female, propodeal enclosure with deep depression, and delimited by lunular, conspicuous carina; upper frons, ocellar and vertex area with very sparse micro-punctures; and different body coloration.



Figs 1 – 3. *Mimesa quadridentata* Ma, Li et Chen, sp. nov. (Female). 1. Frontal view of head. 2. Dorsal view of gastral tergum I. 3. Dorsal view of pygidial plate. Scale bars: 1 = 1.18 mm, 2 = 1 mm, 3 = 1.52 mm.



Figs 4 – 10. *Mimesa sparsipunctulata* Ma, Li et Chen, sp. nov. 4 – 6. Female. 7 – 10. Male. 4, 7. Frontal view of head. 5. Dorsal view of gastral tergum I. 6. Dorsal view of pygidial plate. 8. Lateral view of antennal segments III – VIII. 9, 10. Lateral view of male genitalia. Scale bars: 4, 7 = 1.18 mm, 5, 8 = 1 mm, 6 = 1.52 mm, 9 – 10 = 1.82 mm.

Description. Female. Body length 6.5 mm. Black; mandible apically reddish brown; mandible medially, antenna beneath, tibial spur, tarsus, fore and mid tibiae, hind tibia basally, wing tegula and wing vein fulvous; femur, hind tibia medially and posteriorly, petiole, gastral segments I to III, and pygidial area apically dark brown. Setae on clypeus dense, silvery, on upper frons, mesopleuron, metanotum and propodeum dense silvery, on vertex, scutum and leg silvery, sparse.

Clypeus with dense, fine punctures, free margin with four sinuate prominences medially; near apex with a transverse tubercle medially, tubercle round, shiny, impunctate, strongly raised (Fig. 4); base half of clypeal disk flat. Mandible bidentate apically. Interantennal tooth very low, small, somewhat

conspicuous. Antenna very short, segments III – XII gradually thicker and shorter toward apex; segment III about $3 \times$, segment IV nearly $1.8 \times$, segment XI about $0.85 \times$ as long as wide apically, respectively. Upper frons, ocellar and vertex area shiny, with very sparse micro-punctures that are $3 - 5 \times$ diameters apart; ocellar area flat. HW:HLD:HLF = 70:29:53; POD:OOD:OCD = 12:13:11.

Anterior and lateral portions of mesoscutum with fine, dense punctures; middle and posterior portion of mesoscutum with midsize, dense punctures that are $1.5 - 2.0 \times$ diameters apart. Scutellum with fine, sparse punctures. Metanotum with irregular, dense, slender rugae. Mesopleuron with fine, sparse punctures that are $2 \times$ diameters apart; lower portion with slender, sparse, short, longitudinally oblique

ridges posteriorly; upper mesopleural with contiguous punctures and slender, longitudinal rugae. Propodeal enclosure delimited by lunular, conspicuous carina, with deep depression, and slightly sturdy, sparse, longitudinal rugae; posterior surface of propodeum with dense, slender, longitudinal rugae anteriorly and laterally, remainder with irregular, slender, reticulate rugae; lateral surface of propodeum with irregular, slender, reticulate ridges posteriorly. Both first and second recurrent veins of forewing ending in second submarginal cell. Legs normal, hind tibia with one or two rows of yellowish spines on out surface, spines slender, slightly longer than adjacent pubescence.

Dorsal surface of petiole shiny, slightly convex; in dorsal view, basal width of petiole equal to its apical width (Fig. 5); lateral and ventral surface of petiole flat, without carina or keel. PL:PW:LTI:WTI:HFL:HTL = 27:7:35:31:37:42. Hind trochanter not reaching end of petiole, hind femur far exceeding end of petiole. Gastral segments shiny, without punctures; pygidial area small triangle, apex obtuse, with dense, fine punctures, slender, short longitudinal rugae, and setae (Fig. 6).

Male. Body length 5.7 mm. Mandible apically bright reddish brown; leg femur apically fulvous; basal and middle portion of femur and gastral segments I to II dark brown. Free margin of clypeus with two sinuate prominences medially, near apex without tubercle (Fig. 7). Length of antennal segments III – XII nearly equal to each other; segments IV – VII beneath with linear tyloids (Fig. 8); segment III about $2.7 \times$, segment IV nearly $1.5 \times$, segment XII about $0.85 \times$ as long as wide apically, respectively. HW:HLD:HLF = 57:25:46; POD:OOD:OCD = 10:10:9. Mesopleuron with slightly coarser punctures than that in female. Propodeal enclosure delimited by inconspicuous carina; dorsal and posterior surface of propodeum with slender, reticulate rugae. PL:PW:LTI:WTI:HFL:HTL = 22:7:29:29:32:38. Male genitalia (Figs 9-10).

Holotype ♀, China, Xinjiang, Moyu ($37^{\circ}19'N$, $79^{\circ}45'E$; alt. 1 240 m), 28 June 1959, coll. LI Chang-Qing. Paratypes: 1 ♂, China, Xinjiang, Moyu ($37^{\circ}19'N$, $79^{\circ}45'E$; alt. 1 240 m), 28 June 1959, coll. LI Chang-Qing; 1 ♂, China, Xinjiang, Hetian ($37^{\circ}6'N$, $79^{\circ}54'E$; alt. 1 300 m), 29 June 1959, coll. WANG Shu-Yong. All of the type specimens are deposited in the Institute of Zoology, the Chinese Academy of Sciences, Beijing, China (IZB).

Distribution. China, Xinjiang.

Etymology. The name, *sparsipunctulata*, derived from Latin *sparsi* (= sparse) and Latin *punctulata* (= with puncture), refers to upper frons, ocellar and vertex area with very sparse micro-punctures, which is

one of the main recognition characters of the species.

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新疆米短柄泥蜂属二新种记述 (膜翅目, 蜜蜂总科, 方头泥蜂科)

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摘 要 记述了采自新疆 2 新种, 四齿米短柄泥蜂 *M. quadridentata* Ma, Li et Chen, sp. nov. 和散点米短柄泥蜂 *M. sparsipunctulata* Ma, Li et Chen, sp. nov., 对米短柄泥蜂属中国已知种类检索表进行了部分修订。模式标本分别保存在浙江大学寄生蜂标本室和中国科学院动物研究所昆虫标本馆。

1 四齿米短柄泥蜂, 新种 *Mimesa quadridentata* Ma, Li et Chen, sp. nov. (图 1~3)

该种与其相似种 *Mimesa kaszabi* Tsuneki, 1972 的区别在于: POD: OOD: OCD = 11: 14: 12; 唇基前缘中部具 4 个三角形齿突; 腹柄背区略隆起, 端部浅凹陷, 端部较基部宽; 腹柄侧区两侧具细弱纵脊, 中后部具 2 细弱纵脊; 并胸腹节背区无凹陷无围界脊; 后足腿节末端略超过腹柄端部; 中胸侧板无或有微刻点; 头、中胸刻点小而稀; 体色。

正模 ♀, 新疆泽普, 1991-07-16, 何俊华采; 副模:

关键词 膜翅目, 方头泥蜂科, 米短柄泥蜂属, 新种, 中国.
中图分类号 Q969.557.1

1 ♀, 新疆皮山, 1991-07-17, 何俊华采。模式标本保存在浙江大学寄生蜂标本室。

2 散点米短柄泥蜂, 新种 *Mimesa sparsipunctulata* Ma, Li et Chen, sp. nov. (图 4~10)

该种与其相似种 *Mimesa lutaria* (Fabricius, 1787) 区别在于: 雌唇基端部中部近前缘处圆瘤状突起, 高隆起; 雄 4~7 节下侧具线状脊; 雌并胸腹节背区凹陷深, 新月形围界脊明显; 腿节末端远超过腹柄端部; 额区上部、单眼三角区及其两侧、头顶微刻点极稀; 体色。

正模 ♀, 新疆墨玉, 1 240 m, 1959-06-28, 李常庆采。副模: 1 ♂, 新疆墨玉, 1 240 m, 1959-06-28, 李常庆采; 1 ♂, 新疆和田, 1 300 m, 1959-06-29, 王书永采。模式标本保存在中国科学院动物研究所昆虫标本馆。

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